Eastern Upper Peninsula Rapid Watershed Assessment

Summary

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Conservation Districts

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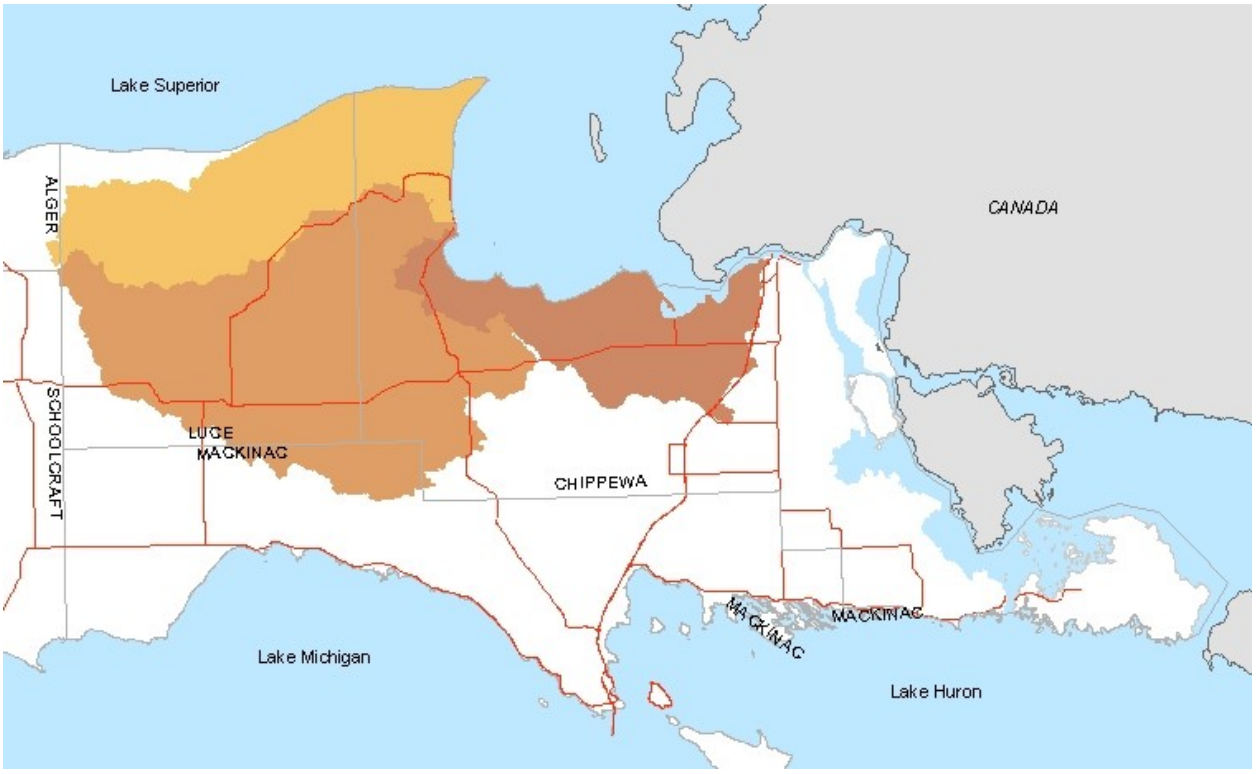

A Joint Project Between

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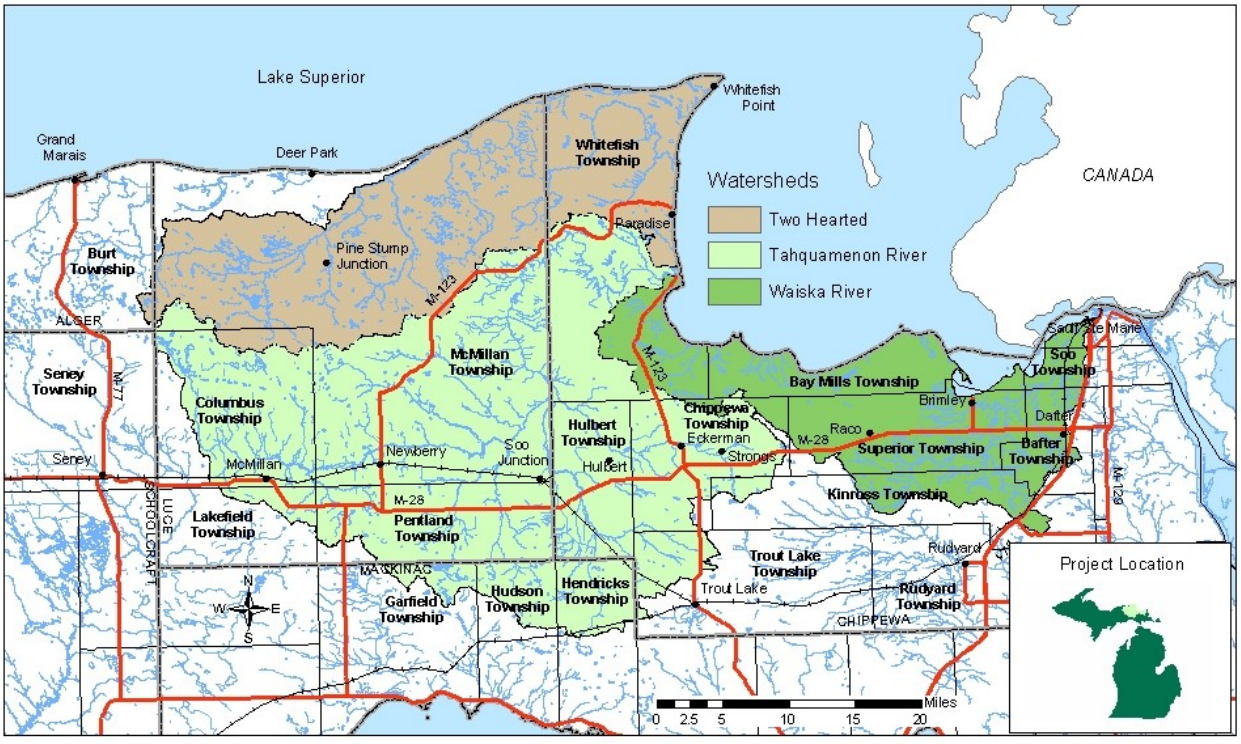
Background

The three watersheds within the Eastern Upper Peninsula rapid watershed assessment include the Tahquamenon, Two-Hearted, and Waiska Rivers. Each represents different ecosystems in different stages of development, requiring different strategies to sustain their natural resources. Each watershed sustains very different communities with different economic and social requirements. This assessment recognizes that there is one commonality: Future land use will require planning and management that accommodates the protection and sustainability of natural resources in order to guarantee the sustainability of the Eastern Upper Peninsula community.

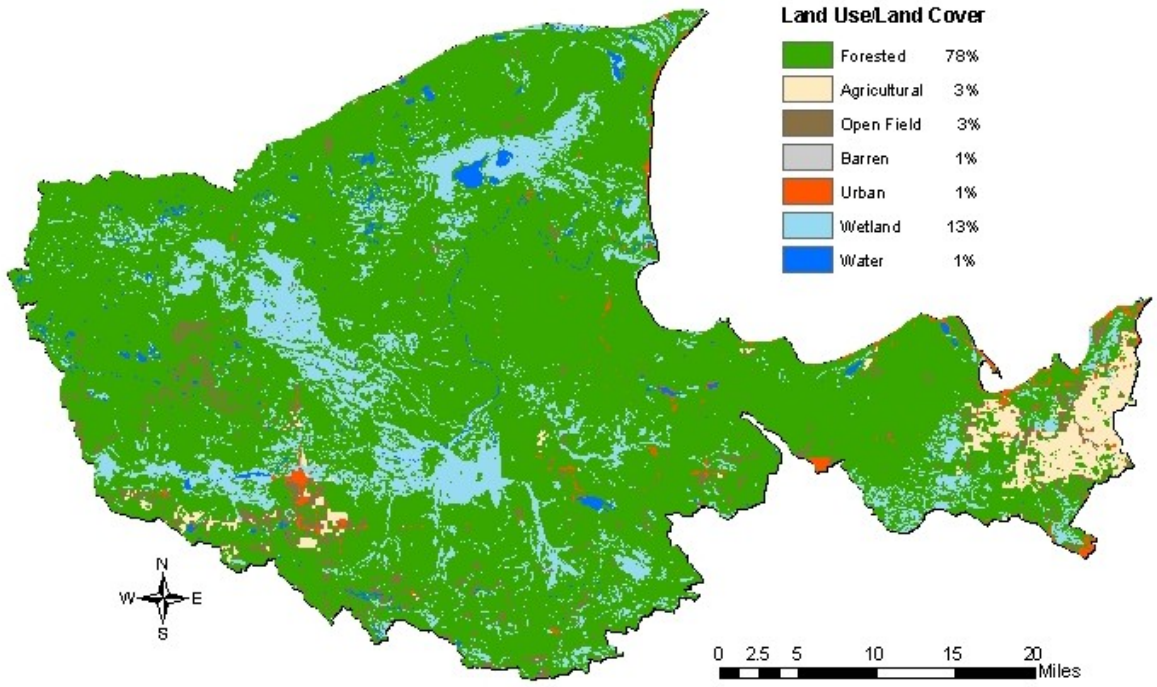


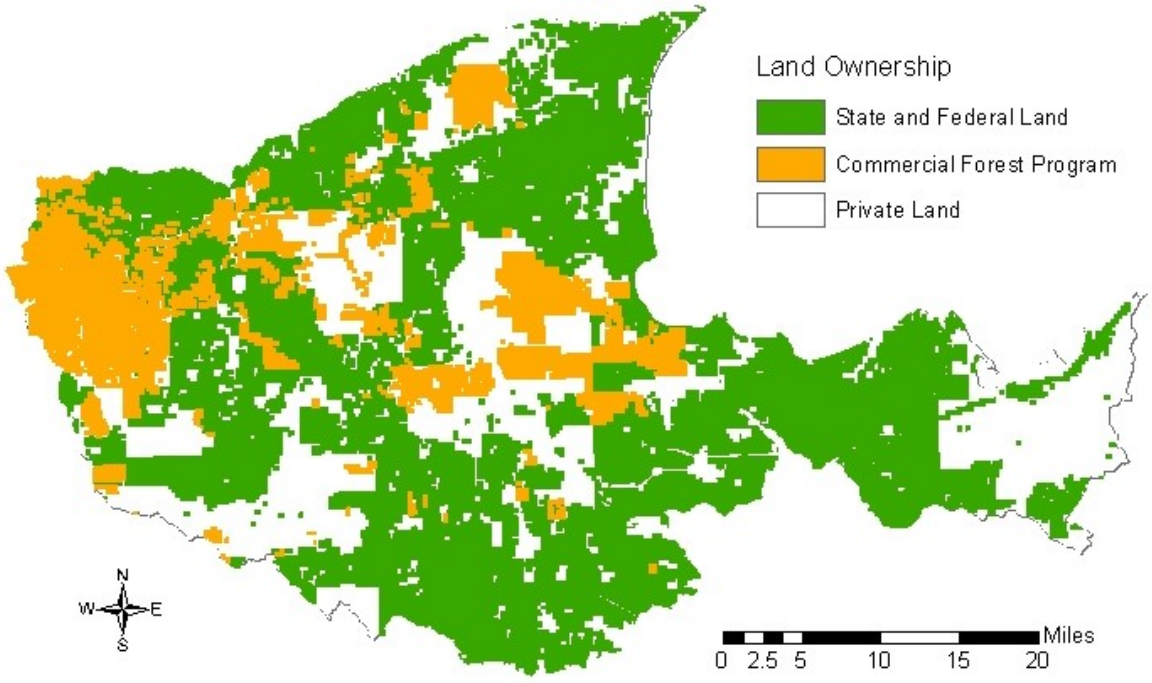
Source: USDA, NRCS - Geodata: Hydrologic Units
Mapped by CEMCD on March 3, 2008

The Watersheds

The Eastern Upper Peninsula watershed assessment area consists of 975,878 acres, with the largest being the Tahquamenon, covering approximately 517,968 acres, the Two Hearted next with 269,154 and the Waiska with 188,755. The area is typically rural, although the Waiska covers a western region of Sault Ste. Marie, and approximately 5,194 people. McMillan Township in Luce County, which includes the city of Newberry, is in the Tahquamenon Watershed, and hosts 3,656 residents. Other populations clusters of note include Brimley and Bay Mills in Superior and Bay Mills Townships, along with Paradise in Whitefish Township.

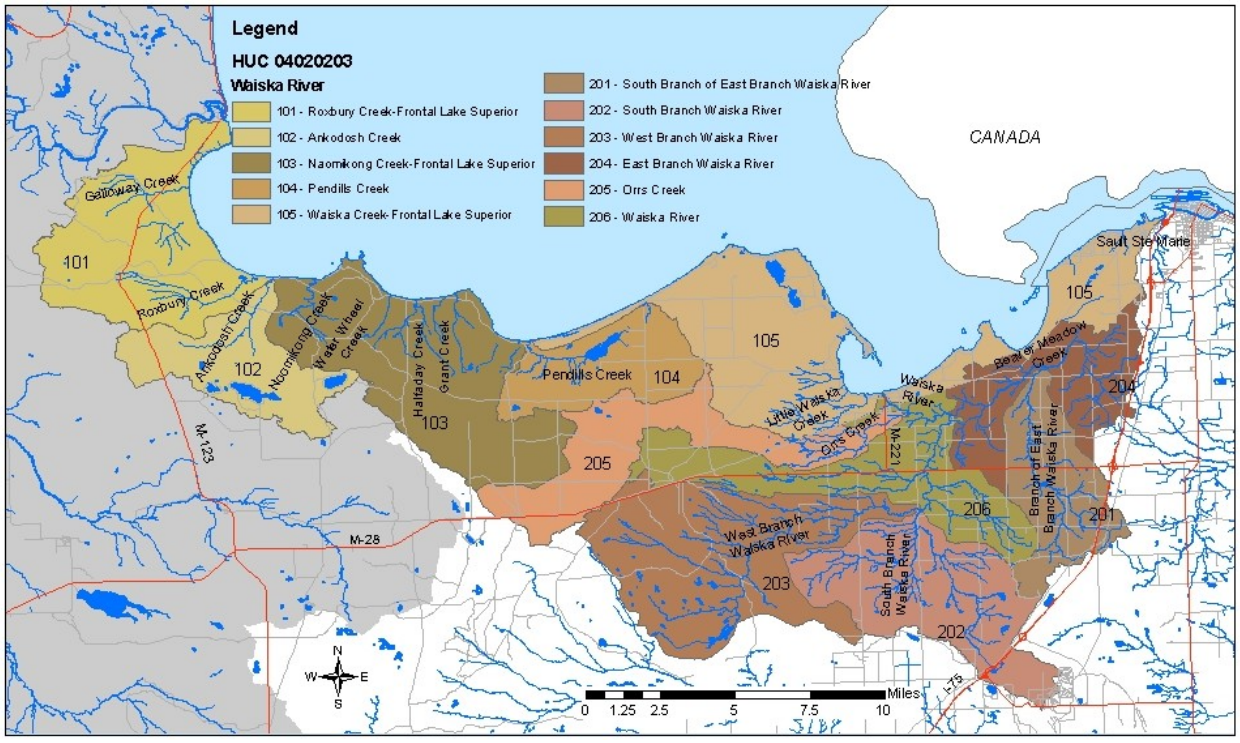
Just over half of the land is in public ownership (55%). Private land can be split between typical landowners (30%) and large corporate interests (15%). 78% of the land is forested, only 3% is considered agricultural, and 13% is wetland. The remaining land use/land cover is considered urban (1%), open field (3%), barren (1%), and surface water (1%).





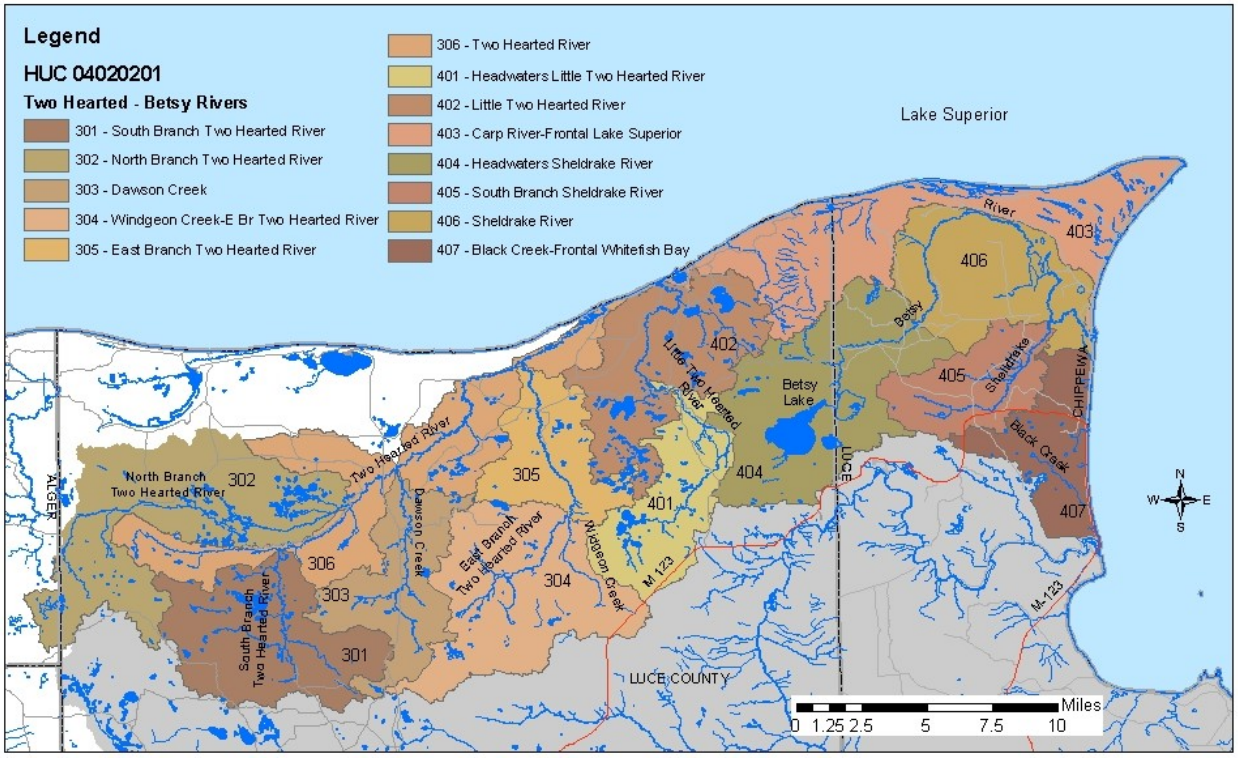
The Waiska River

The Waiska River watershed is within the *Rudyard Clay Lake Plain*, where relatively thick, poorly drained clays overlie limestone and dolomite bedrock. Consequently, drainage issues have been a limiting factor for all land uses, including urban development and agriculture. Historically, much of the clay lake plain was cleared for agriculture and settlement, and deep ditches were dug to accelerate drainage. Some of that cleared plain is no longer farmed, and is now converting to herbaceous species and shrub land. Remaining forest cover is dominated by species adaptable to the poorly drained soils, including red maple, balsam poplar, black spruce, tamarack, and northern white cedar.



The Two Hearted River

The Two-Hearted River has been designated by the State of Michigan as a Natural River due to its high quality waters. 58,564 acres of the watershed are in private ownership. The bulk of the private holdings, in all areas except the East Branch, belong to corporate interests including the *Heartwood Forestland Fund IV (32,632 acres) and The Nature Conservancy (24,244).* Corporate land, in some cases, is much like public land. In lieu of paying property taxes, Corporations allow public access, primarily for recreation purposes. In recent years, corporations have been selling large tracts of land to other corporations with more real estate development interests. Concern has been growing about the future management of that land changing from sustainable forestry to land development.



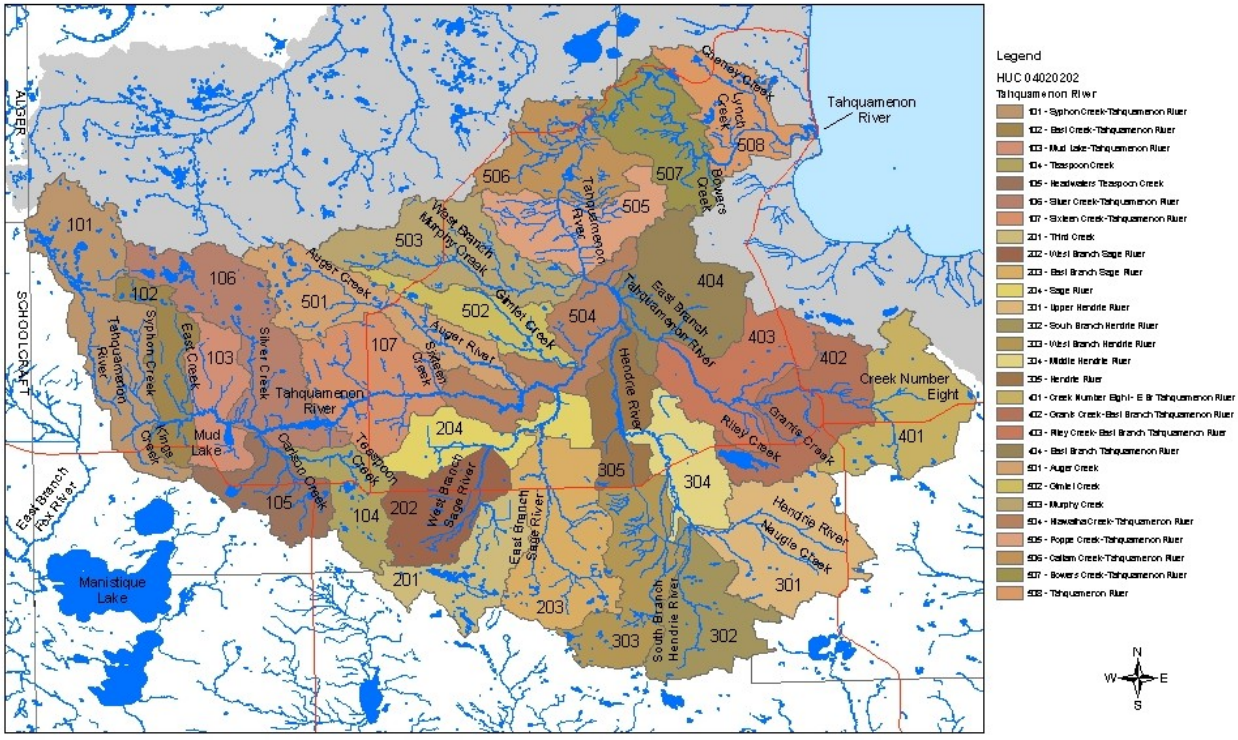
Besides ownership by other corporations and hunting clubs, the remaining private lands are scattered throughout the area in individual ownerships of relatively small size (40 acres and larger) and are mainly used for hunting and fishing camps. The Two Hearted area community relies on tourism, forestry, trade and services, and government for economic sustenance. Given the remoteness of the area, the existing low base for service-related activities, the thin nature of forestry for economic development, and the exodus of industries from the region, economic expansion is not expected to result in land development pressure in the Two Hearted River system. However, the desire on the part of urban dwellers to own a northern retreat and the recent land sales to real estate interests will cause increasing speculation in land and subsequent development pressure as well as concern over the future management of natural resources on potentially fragmented land.

The Tahquamenon River

The Tahquamenon River is an example of ecological perseverance. The watershed still exhibits evidence of its early degradation during the logging era. Poor land use practices during the early 20th century accelerated erosion along its banks. Straight-line dredging also occurred 120 years ago to remove the sharp stream bends and facilitate log transport. Tributaries were cleared of "debris" for the same reason.

Today, little evidence remains of this environmentally heavy-handed logging, and stream and riparian habitats within this watershed have rebounded. This is due, in part, to the large wetland complexes located along the river's central mainstream.

All large tributaries flow into the wetland several miles from the mainstream, and both their gradient and velocity virtually disappear at the same point. This has protected the interior from development and acts to moderate discharge fluctuations during the summer and fall by absorbing and then slowly releasing water from rainfall events.



Further watershed protection has come from the re-growth of riparian forests, which stabilize streambanks, shade stream channels, help control surface runoff, and provide periodic large woody material to the stream channel that is used as habitat by aquatic organisms.

Sand bed load is the most significant remaining evidence of the extensive land and timber management effort, as many lower gradient stream sections still suffer from excessive sand sediment load, pools filled in with sand, and subsequent declines in aquatic invertebrate communities.

Despite the sand, however, most fish communities appear well balanced with good species diversity, likely owing to the healthy riparian community and contributions of terrestrial invertebrates, leaf litter as nutrient sources for periphyton and invertebrates. Large instream wood structure provides a stable surface for periphyton and invertebrate colonization. Consequently, the watershed sustains a relatively productive hunting, fishing, and trapping recreational livelihood. In fact, the upstream half of the East Branch which lies with the U.S. Forest Service property has been designated as a Wild and Scenic River.

The section extending from the headwaters downstream about 11 miles was designated "recreational" for its exceptional brook trout fishing, while the small remaining section of USFS ownership west of section 20 was designated "wild." The existing wild brook trout population was recognized in the designation as an outstanding value of the river that must be preserved.

As the local population increases and the area attracts seasonal visitors to establish vacation and retirement homes, there will be a desire to develop many more river or streamside areas. Education, vigilance, and funding will be needed to keep erosion at the lower, more natural levels, and to minimize sedimentation due to human activity in the riparian corridor.

Goals/Objectives

Wise land use and protection of the area's natural resources will be the key to sustaining this Eastern Upper Peninsula community. Wildlife such as migratory birds and sharptail grouse use the cut fields in the Waiska River watershed as an important feeding and resting stop. White-tailed deer and black bear make the vast northern forests of the Two Hearted and Tahquamenon their home. The EUP watershed community recognizes that these healthy relationships also contribute to a sustainable socio-economic system. CEMCD and local technical representatives are focused on protecting and improving the condition of natural resources in the watershed, not only to sustain the natural environment, but to also sustain the economic one.

Priorities for maintaining healthy natural resources for CEMCD, the Sault NRCS staff, and partners include:

- Minimizing soil erosion and sedimentation
- Improving water quality
- Enhancing fish and wildlife habitat

Rapid Watershed Assessments

In September 2007, the Chippewa/East Mackinac Conservation District (CEMCD) entered into an agreement with Upper Peninsula Resource Conservation and Development Council (RC&D) to develop a profile of the resource conditions and conservation efforts in the Tahquamenon (HUC 04020202), Two Hearted (04020201), and Waiska River (04020203) watersheds, to quantify the size, scope, and value of natural resource needs in the watersheds. The project, referred to as the "Cooperative Conservation Partnership Initiative for the Eastern Upper Peninsula Rapid Watershed Assessments", constitutes an assessment conducted by CEMCD in collaboration with a local technical committee and local community steering committee, including an inventory of agricultural areas, identification of conservation opportunities, current levels of natural resource management, and estimation of impacts of conservation opportunities on the local priority resource concerns.

Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help land-owners and local leaders set priorities and determine the best actions to achieve their goals (NRCS 2006).

According to the Natural Resource Conservation Service (2006), the rapid assessment provides less detail and analysis than full-blown studies and plans; they do provide the benefits of NRCS locally-led planning in less time and at a reduced cost. The benefits include:

- Quick and inexpensive plans for setting priorities and taking action
- Providing a level of detail that is sufficient for identifying actions that can be taken with no further watershed-level studies or analyses
- Actions to be taken may require further Federal or State permits or ESA or NEPA analysis but these activities are part of standard requirements for use of best management practices (BMPs) and conservation systems
- Identifying where further detailed analyses or watershed studies are needed
- Plans address multiple objectives and concerns of landowners and communities
- Plans are based on established partnerships at the local and state levels
- Plans enable landowners and communities to decide on the best mix of NRCS programs that will meet their goals
- Plans include the full array of conservation program tools (i.e. cost-share practices, easements, technical assistance)

Resource Protection Accomplishments

In order to define conservation needs and design appropriate remediation, it is necessary to recognize the current conservation work of private land managers. An indicator of these efforts is the work that has been undertaken in partnership with NRCS and the local conservation district. Since fiscal year 2006, Eastern Upper Peninsula watershed landowners have improved resource conditions on 2,790 acres of privately owned lands, with assistance from NRCS and the Conservation District. During this time, private land managers have worked with NRCS and the conservation districts in the watershed with a combination of private, state, and federal funding to:

- Improve 991 acres of wetlands implementing the Wetland Reserve Program
- Improve 396 acres of grasslands implementing the Grassland Reserve Program
- Enhance 91 acres of wildlife habitat implementing Best Management Practices through the Continuous Conservation Reserve and Wildlife Habitat Improvement Program.
- Improve conditions on 1,314 acres of private working lands using the Environmental Quality Incentives Program

Summary of Conservation Opportunities

The goal of a rapid watershed assessment is not only to consider these conservation accomplishments; the assessment also defines what can be accomplished with a strong conservation partnership in the Eastern Upper Peninsula watersheds. The EUP watershed has historically been plagued by poor land use decisions during the logging era, agricultural operations, and the development of the existent urban infrastructure.

Ditching and filling of wetlands have altered natural hydrology, channeling and impounding rivers and streams have eroded floodplains and destroyed fisheries habitat, poor building practices have destroyed natural habitat and polluted area waters. Fortunately, resource professionals are working to increase awareness of the socio-economic benefits of protecting and enhancing the natural resources of the Eastern Upper Peninsula watersheds.

The recommendations that follow focus on three main goals for the region's assessment partners:

1) Restore and maintain natural hydrology

2) Improve soil and forest management

3) Protect and enhance fisheries and wildlife habitat

4) Sustain natural resource-based socio-economic livelihood

Partners recognize that focusing on these priorities encompass a broad range of environmental, social, and economical issues, and with successful implementation of conservation, this focus will result in accumulative long-term benefits for a wide range of natural resources, including but not limited to fish and wildlife species and their habitat, agricultural and silvicultural interests, as well as the social and economic interests of urban and other water users.

Restore and Maintain Natural Hydrology

A watershed's natural hydrology has a direct impact on many facets of water quality, including everything from water temperature and clarity to fish habitat, as well as water availability to agriculture and urban interests.

The Waiska River watershed hydrology has been significantly altered by deforestation for agriculture and urban development, accelerated drainage by wetland destruction and landscape ditching, along with increased urban imperviousness. Other sources include creek channelization, riparian zone deforestation, poorly designed road/stream crossings, and other land use activity.

Recent drought has illustrated the effects of hydrologic alterations, including reduced water in the soil profile and stream base flows during summer months.

The Tahquamenon River watershed hydrology has been altered mainly by man-induced riparian deforestation and flow impoundments during the logging era. Despite these historic impacts, the river's hydrology has been largely protected by its extensive wetland complexes with surround the mainstream.

Fortunately, private landowners can work with resource professionals to improve natural hydrology throughout impacted areas by restoring and enhancing riparian wetlands, as well as reestablishing riparian forest and herbaceous buffers. Restoration of stream floodplains in the Waiska with their surrounding wetlands and riparian areas will increase the "sponge" effect of the landscape, allowing for the slow release of water through the long, dry summer months, which still occurs in the Tahquamenon.

Improve soil and forest management

Soil provides the basis for sustainability of all natural resources. Natural resources, in turn, provide a significant basis for the EUP's socio-economic well-being. Agricultural and forestry biomass productivity and vigor are directly linked to stable, nutrient rich, healthy soils. Wildlife and domestic livestock forage availability and quality depends upon healthy soils. Fisheries and their forage stocks depend upon healthy stable soils. Since the EUP social and economic structure depend upon viable agriculture, forestry, and nature-based recreation and tourism, the sustainability of the community depends upon healthy soils.

The greatest threat to soil and the greatest opportunity for conservation is accelerated erosion. Erosion is the loss of nutrient-rich topsoil. It is the loss of that which supports all life. Fortunately, opportunities exist to stop it. Soil erosion reduction opportunities in the watershed range from implementing soil erosion and sediment control measures during urban infrastructure improvements and utilizing vegetated buffers along streams and shorelines, to utilizing cover crops and fencing livestock from waterways on agriculture operations. We can also utilize heavy use area protection, tree/shrub/grass establishment on erodible soils, and stabilizing eroding stream banks with native vegetation and other best management practices.

Comprehensive soil stabilization will result in benefits for all natural resource users. Agricultural fields and forestry management areas will retain nutrients and increase vegetative productivity and vigor. Consequently, livestock and wildlife will find an increase in forage quality and quantity -- both priority concerns for the EUP watersheds. Water quality will benefit, as soils stabilized with vegetation retain moisture, and vegetation provides filtration of storm water runoff.

Improving Fish and Wildlife Habitat

The EUP watershed supports a quality fishery and a multitude of wildlife species throughout the fields of the Waiska River watershed, the wetlands of the Tahquamenon, and the pristine forests of the Two Hearted.

Interior and coastal wetlands rear a variety of waterfowl species and provide a stopover for waterfowl using the both the Mississippi and Atlantic Flyways. Whitefish Point is a world-renowned migration corridor for birds nesting in Canada and wintering to the south. The Two Hearted and Tahquamenon Rivers are high quality trout waters.

Upland forests, open areas, and certain agriculture areas play host to many terrestrial species with special mention to the sharptail grouse, a species which has prospered as a result of resource partners creating and restoring habitat through activities like grassland protection.

Opportunities for conservation on upland areas include tree planting and developing wildlife habitat along the edges of agriculture fields, wetland restoration and enhancement, and forest harvest management all contribute to enhancing wildlife habitat in the watershed.

Sustain natural resource-based socio-economic livelihood

The EUP community's social and economic well-being is directly linked to the sustainability of the area's natural resources. Sportsman hunt and fish for game in the Two-Hearted and Tahquamenon River watersheds, as well as the fields and bays of the Waiska. Tourists travel through, viewing unique birds, moose, and pristine environs. Timber and hay are harvested from area forests and fields for needs across the world. Protecting natural resources is protecting community.

Opportunities for conservation of key economic natural resources include fisheries and wildlife habitat improvement through tree planting along riparian corridors and agricultural fields, restoring and enhancing wetlands, forest harvest management, and various permanent land protection strategies.

Evaluation of Success

The eventual success of the EUP Watershed Rapid Watershed Assessment will be the adoption of priority conservation practices on approximately 434,386 acres of private farmland, forests, wetlands, open areas, and the urban sector. Successful implementation will require $1.2 million for installation of conservation practices. Successful implementation will require more than five years with estimated current financial and technical resources.

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Conservation participation was estimated using NRCS Social Sciences Technical Note 1801, Guide for Estimating Participation in Conservation, 2004. Four categories of indicators were evaluated: Personal characteristics, farm structural characteristics, perceptions of conservation, and community context. Estimates are based on information received from local conservationists in the watershed.

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